

REMARKS

Status of the claims:

With the above amendments, claims 1 and 6-9 have been amended. Claims 1-22 are pending and ready for further action on the merits. No new matter has been added by way of the above amendments. All amendments are non-narrowing in nature as they are made simply to correct spelling errors or to make the claims more clear. Reconsideration is respectfully requested in light of the following remarks.

Specification Objections

The specification is objected to because the Examiner is unable to locate the documents cited on page 3, lines 16-18 of the specification. Attached, please find enclosed the two documents cited on page 3, lines 16-18.

The Examiner also objects to claims 4, 5, 8, and 9 under 37 CFR §1.75(c) for being substantial duplicates of the claims from which they depend. Applicants traverse. Applicants submit that claims 4, 5, 8, and 9 are not substantial duplicates of the claims from which they depend. Claim 4 has a silicate compound, which is not present in claim 1 and thus it further limits claim 1. Claim 5 has an additional moiety attached to the silicate compound present in claim 4 so it further limits claim 1 (and is

also narrower in scope than claim 4). Claims 8 and 9 claim blend copolymers comprising a percentage of the compounds in claim 4 and 5, respectively with a percentage of polymethylmethacrylate or polyvinylcabazol. Thus, claims 8 and 9 are of different scope (because claims 4 and 5 are of different scope).

Moreover, the silicate compounds in both claims 4 and 5 have two R groups as substituents. Accordingly, there are two disperse red 1 functional groups containing azobenzene attached. Withdrawal of the objection is warranted and respectfully requested.

Rejections under 35 USC §112, second paragraph

Claims 1-10 and 13-22 have been rejected under 35 USC §112, second paragraph for allegedly being indefinite.

The Examiner asserts that claim 1 is indefinite because it is not clear that there are two disperse red functional groups bound to the same repeating monomer. Applicants have amended claim 1 so that it now recites, "two disperse red functional groups of Chemical Formula 1 are bonded to each repeat unit of the polymer". Applicants believe that with this amendment that the rejection has been obviated. Withdrawal of the rejection is warranted and respectfully requested.

Claims 6-9 have been rejected for misspelling "polymethylmethacrylate". Applicants have amended claims 6-9 so that "polymethylmethacrylate" is spelled correctly. Withdrawal of the rejection is warranted and respectfully requested.

Claim 13 has been rejected because the formula in claim 13 does not recite units. Applicants submit that the formula should not recite units. It is well-known by those of skill in the art that radians (which are indeed angles) do not have units attached with them. For example an angle of $\pi/4$ corresponds to a 45° angle. For the Examiner's benefit, please find the attached page from Thomas, G. Elements of Calculus and Analytic Geometry, 1976, Addison-Wesley publishing Co., Menlo Park, Ca. p. 146, which demonstrates that an angle given in radians is unitless. Withdrawal of the rejection is warranted and respectfully requested.

The Examiner asserts that it is unknown what is meant by the term "blend copolymer". The Examiner is invited to see page 6, lines 10-14 wherein it is explained what is meant by a blend copolymer. Withdrawal of the rejection is warranted and respectfully requested.

Rejections under 35 USC §§102/103

Claims 1, 4, 5, and 10 are rejected under 35 USC §102(b) as allegedly being anticipated by Han et al. I (Han et al., Mol. Cryst. Liq. Cryst., Vol. 349, pp. 75-78, (2000)).

Claims 1 and 10 are rejected under 35 USC §102(b) as allegedly being anticipated by Burns '760 (US Patent No. 5,672,760).

Claims 1, 2, and 10 are rejected under 35 USC §102(b) as allegedly being anticipated by Han et al. II (Han et al., Polymer Preprints, Vol. 40(2), pp. 1234 (1999)).

Claims 11-13 are rejected under 35 USC §102(b) as allegedly being anticipated by Savant '221 (US Patent No. 5,384,221).

Claims 1, 2 and 10 are rejected under 35 USC §102(b) as allegedly being anticipated by Han et al. III (Han et al., Mol. Cryst. Liq. Cryst., Vol. 327, pp. 271-274, (1999)).

Claims 1, 2, 6, and 10-22 are rejected under 35 USC §103(a) as allegedly being unpatentable over Han et al. II or Han et al. III in view of Savant '221.

Claims 1, 4, 5, and 8-22 are rejected under 35 USC §103(a) as allegedly being unpatentable over Han et al. I in view of Savant '221.

These rejections are traversed for the following reasons.

Removal of the Rejection over Han et al. I

The Examiner is of the opinion that Han et al. I has a publication date of more than one year prior to the filing of the instant application and is therefore a reference under 35 USC §102(b). Applicants respectfully point out that the publication date of the Han et al. I reference is from September 2000 whereas the instant application has a filing date of April 12, 2001. Thus, Han et al. I would be effective prior art under 35 USC §102(a). Attached to this reply please find a 37 CFR §1.132 declaration (Katz declaration) signed by one of the inventors of the instant invention antedating the Han et al. I reference. With this declaration, Han et al. I is no longer available as prior art. Withdrawal of the rejection is warranted and respectfully requested.

Removal of the Rejection over Burns '760

Burns '760 can not anticipate the instant invention because Burns '760 fails to disclose the elements of the instant invention. "A claim is only anticipated if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference". See *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)".

In particular, Burns '760 fails to disclose "two disperse red functional groups of Chemical Formula 1 are bonded to each repeat unit of the polymer" as is claimed in claim 1. Because claim 10 is dependent from claim 1, claim 10 also can not be anticipated. Accordingly, the rejection is inapposite. Withdrawal of the rejection is warranted and respectfully requested.

Removal of the Rejection over Han et al. II

The Examiner asserts that the synthesis present in Han et al. II anticipates the instant invention as it is identical. Applicants disagree. Malonyl dichloride is disclosed in the reference but is not disclosed in the portion of the instant invention pointed to by the Examiner (page 21). Thus, Applicants assert that the methods are not identical as asserted by the Examiner. Withdrawal of the rejection is warranted and respectfully requested.

Removal of the Rejection over Savant '221

Savant '221 fails to disclose a "second polarizing plate . . . having a polaroid axis perpendicular to that of the first polarizing plate" as claimed in claim 11. Accordingly, Savant '221 cannot anticipate the instant claim 11 because Savant '221 fails to disclose the elements of claim 11. Moreover, because,

claims 12 and 13 are dependent from claim 11, Savant '221 also cannot anticipate those claims either. Withdrawal of the rejection is warranted and respectfully requested.

Removal of the Rejection over Han et al. III

The Examiner asserts that the synthesis present in Han et al. III anticipates the instant invention as it is identical. Applicants disagree. The abstract does not indicate that two disperse red functional groups of Chemical Formula 1 are bonded to each repeat unit of the polymer. Thus, Applicants assert that the methods are not identical as asserted by the Examiner. Withdrawal of the rejection is warranted and respectfully requested.

Removal of the Rejection over Han et al. II or Han et al. III in view of Savant '221

None of the cited references disclose or suggest two disperse red functional groups of Chemical Formula 1 are bonded to each repeat unit of the polymer as is claimed in claim 1. Moreover, none of the references disclose or suggest a "second polarizing plate . . . having a polaroid axis perpendicular to that of the first polarizing plate" as claimed in claim 11. Because all other claims are dependent from claims 1 and 11, either directly or indirectly, all elements of the instantly claimed invention are not present in the cited references.

Thus, the rejection is inapposite. Withdrawal of the rejection is warranted and respectfully requested.

Removal of the Rejection over Han et al. I in view of Savant '221

As explained above, Han et al. I is not available as prior art. In particular, please find an attached 37 CFR §1.132 declaration that antedates the Han et al. I reference.

Accordingly, because Han et al. I is not available as prior art, Applicants assert that the Examiner has failed to make out a *prima facie* case of obviousness with regard to the 35 USC §103(a) rejection over Savant '221. Three criteria must be met to make out a *prima facie* case of obviousness.

- 1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.
- 2) There must be a reasonable expectation of success.
- 3) The prior art reference (or references when combined) must teach or suggest all the claim limitations.

See MPEP §2142 and *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). In particular, the Examiner has failed to meet the third element to make a *prima facie* obviousness rejection. In particular, Savant '221 fails to disclose or suggest a polymer for data storage, in which two disperse red functional groups of Chemical

Formula 1 are bonded to each repeat unit of the polymer as is claimed in claim 1. Moreover, Savant '221 fails to disclose or suggest a "second polarizing plate . . . having a polaroid axis perpendicular to that of the first polarizing plate" as is claimed in claim 11. All of the other rejected claims are dependent upon claims 1 and 11, either directly or indirectly. Thus, Applicants believe that the rejection has been obviated. Withdrawal of the rejection is warranted and respectfully requested.

With the above remarks and amendments, it is believed that the claims, as they now stand, define patentable subject matter such that a passage of the instant invention to allowance is warranted. A Notice to that effect is earnestly solicited.

If any questions remain regarding the above matters, please contact Applicants' representative, T. Benjamin Schroeder (Reg. No. 50,990), in the Washington metropolitan area at the phone number listed below.

Pursuant to the provisions of 37 CFR 1.17 and 1.136(a), Applicants respectfully petition for a one (1) month extension of time for filing a response in connection with the present application. The required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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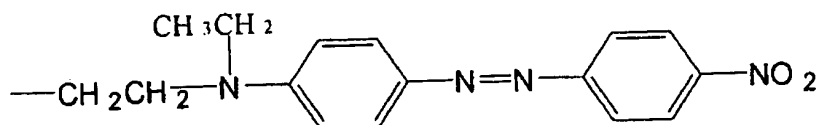
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Attachments as indicated.

VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A polymer for data storage, in which two [of] disperse red functional [group] groups of Chemical Formula 1 are bonded to each repeat unit of the polymer
<Chemical Formula 1>



6. (Amended) A blend copolymer, which consists of 5 ~ 30% of the polymer of claim 2 by weight and 70 ~ 95% of [polymethylmetacrylate] polymethylmethacrylate or polyvinylcabazol by weight.

7. (Amended) A blend copolymer, which consists of 5 ~ 30% of the polymer of claim 3 by weight and 70 ~ 95% of [polymethylmetacrylate] polymethylmethacrylate or polyvinylcabazol by weight.

8. (Amended) A blend copolymer, which consists of 5 ~ 30% of the polymer of claim 4 by weight and 70 ~ 95% of [polymethylmetacrylate] polymethylmethacrylate or

polyvinylcabazol by weight.

9. (Amended) A blend copolymer, which consists of 5 ~ 30% of the polymer of claim 5 by weight and 70 ~ 95% of [polymethylmetacrylate] polymethylmethacrylate or polyvinylcabazol by weight.